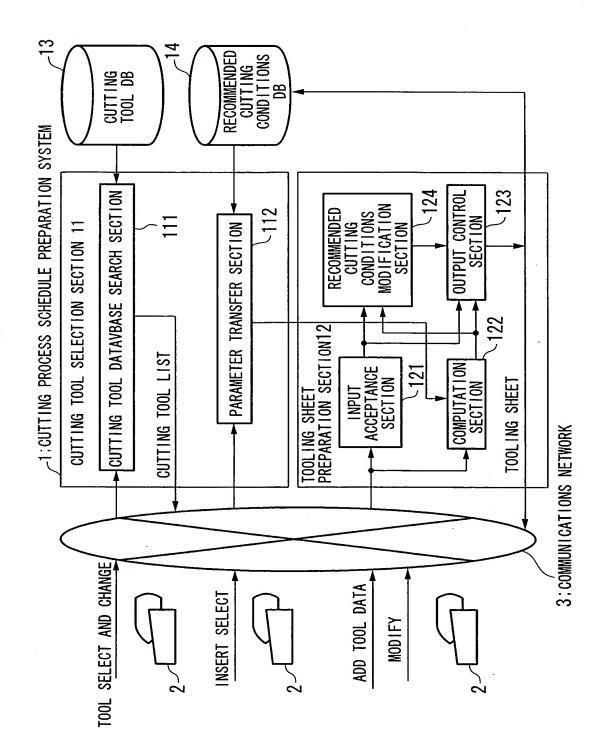


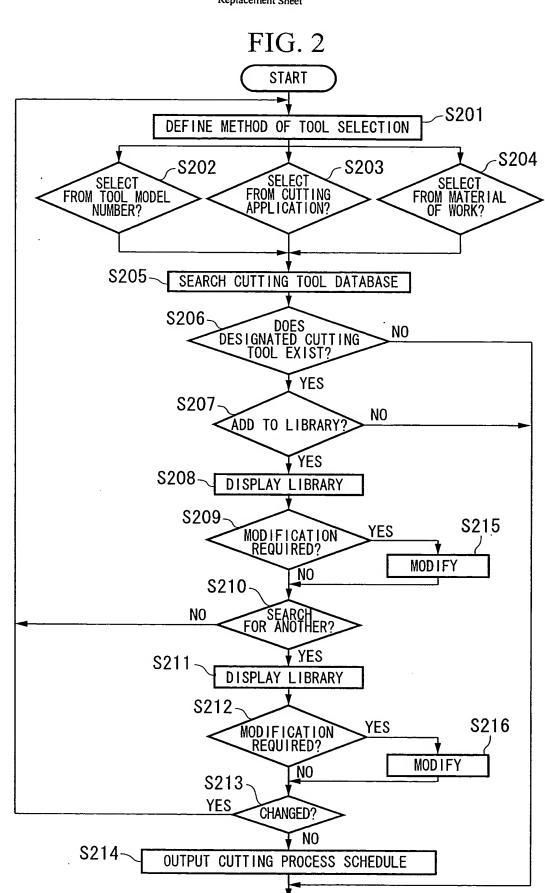
. ,

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FIG. 1



٠,



END

• ;



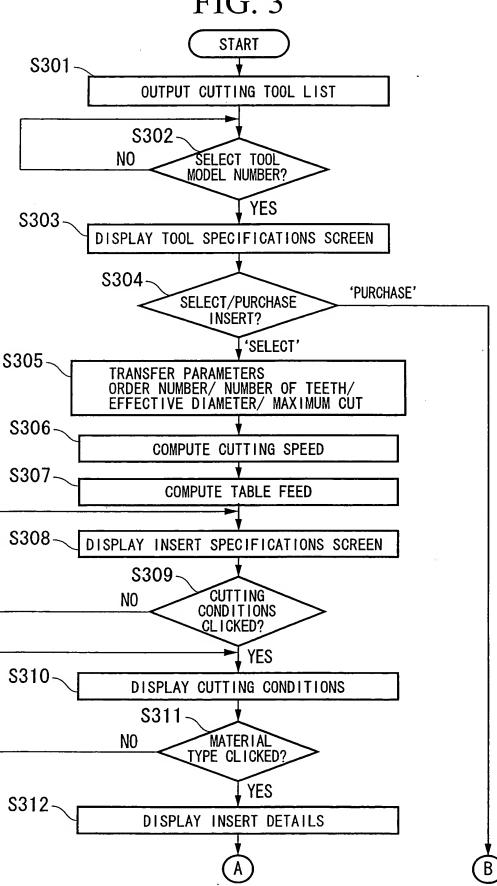


FIG. 4

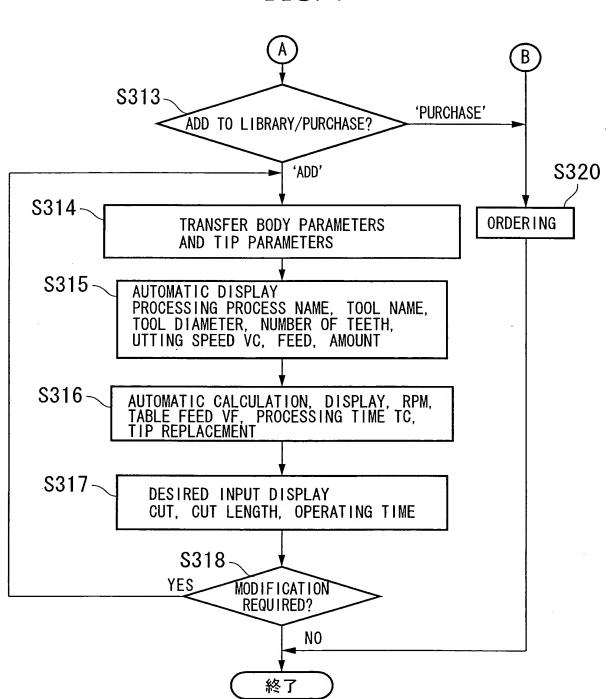


FIG. 5A

04 . 44

EXTERNAL TURNING

EXTERNAL TURNING
BORING

FACE MILLING
END MILLING
DRILLING

FIG. 5B

SEARCH

FIG. 5C

NOT SPECIFIED

NOT SPECIFIED

FACE MILLING

SHOULDER MILLING

FIG. 5D

NOT SPECIFIED

NOT SPECIFIED

GENERAL CUTTING

FINISHING
HEAVY CUTTING
HIGHFEED
SPECIAL (DIFFICULT-TO-CUT MATERIALS)
QING

FIG. 5E

NOT SPECIFIED
MILD STEEL
CARBON STEEL, ALLOY STEEL
HIGH ALLOY STEEL
STAINLESS STEEL
CAST IRON
DUCTILE CAST IRON
ALUMINUM ALLOY STEEL
COPPER, COPPER ALLOYS
NON-FERROUS METAL
HEAT-RESISTANT ALLOY
TITANIUM ALLOY
HARDENED STEEL

NOT SPECIFIED

FIG. 6A

| ASX44 | ASX445/FACE MILLING | 9, | | | | | | | | | | | | | | | |
|--------|---------------------|-----|--------------------|---|----------|-----------|---------------------------------|--------------------|---------|----------|----|---------|----|-----------------------------|----------|----------------|-----------------|
| TVDE | ORDER | - B | NUMBER OF STOCK | ~ | NUMBER | EFFECT IN | /E MAXIMUM INNER CUTTING HEIGHT | INNER (EDGE DI | SUTTING | HE I GHT | | MOUNT | | KEY | KEY WAY | CUTTER | MAXIMUM |
| ILLE | NUMBER | | Z | ~ | TEËTH | ۵ | 10 | 10 | 01 02 | Ξ | Ъ | d h1 d1 | d- | ≥ | ب | WEIGHT (kg) | DEPTH OF CUT |
| COARSE | | | | | , | | 8 | | | | | | | | | | |
| PITCH | 050A03R | ı | 1 | • | 7 | 20 | 63 | ı | ı | 40 | 22 | 70 | Ξ | 22 20 11 10. 4 6. 3 | 6. 3. | 0.5 | 9 |
| FINE | | | | | , | | 8 | | | _ | | | | , | | | |
| PITCH | 050A04R | I | 1 | • | 4. | ဂ္ဂ | | ı | 1 | 40 | 22 | 70 | = | 22 20 11 10. 4 6. 3 | | 0. 4 | 9 |
| COARSE | ASX445- | | | | , | 63 | 75 0 | | | | 3 | 5 | ; | 5 | , | , | ţ |
| PITCH | 063A04R | l | ı | • | - | န | 9.6/ | I | l I | 9 | 77 | 07 | _ | 22 20 11 10.4 6.3 | ი ა | , , | ٥ |

FIG. 6B

| BRP / | BRP /FACE MILLING | C PT | | | | | | | | | | | | | | | |
|---------|-------------------|------|--------------------|-----|--------|-------|--------------------------------------|--------------------|--------------------|--------------|-----|---------|---|-------------------|-----|----------------|------------------|
| TVDE | ORDER | ~₽ | NUMBER OF STOCK | i j | NUMBER | | FECTIVE MAXIMUM INNER CUTTING HEIGHT | INNER (Edge di | SUTT ING AMETER | HEIGHT | | MOUNT | | KEY WAY | WAY | CUTTER | MAXIMUM |
| | NUMBER | | z | ~ | TETH | O | 10 | 10 | D1 D2 | Ξ | ъ | d h1 d1 | 무 | * | + | WEIGHT (kg) | DEPTH OF CUIT |
| CUTTING | BRP6P- | | | | , | | | - | | | | + | | | | | |
| EDGE R6 | 040A03R | ı | i | • | | 27.8 | 0 | | 1 | 40 16 18 | 16 | | i | - 8.4 5.6 | 5.6 | 0.4 | JUNE 4TH |
| CUTTING | BRP8P- | ı | ı | | - | 7 21 | 63 | | | | 5 | 5 | ; | : | | | |
| EDGE R8 | ı | | 1 | • | 1 | 40. / | 3 | | | 2 | 7.7 | 07. | = | 22 20 11 10.4 6.3 | က | 0.7 | MAY 5TH |

(a i, b a a);

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Replacement Sheet

| OBEAD | OBEAD7/DING EVETEM | | | | | | | | | | | | | | | | |
|--------|--------------------|----------------|--------------------|----------------|--------|-------------------------|--|--------------------|--------|-------------|-------------|-------|----|-------------------------------|---------|----------------|---------------|
| 7+ 105 | TICIC DILIC | <u> </u> | | | | | | | | | | | | | | | |
| JOX1 | ORDER | _ 5 | NUMBER OF STOCK | ~ X | NUMBER | EFFECT I VE DI AMETE | NUMBER DIAMETE DIAMETER EDGE DIAMETER HEIGHT | INNER C Edge di | UTTING | HE I GHT | * | MOUNT | | KEY | KEY WAY | CUTTER | MAXIM |
| וויב | NUMBER | | Z | ~ | TEETH | O | D1 | D1 | D2 | H d h1 d1 w | р | ħ | -F | * | 4 | WEIGHT (kg) | DEPT OF CL |
| ı | QBF407R | 1 | | | Y | 00 | 0 | | | S | 7 10 | 2 | | c | 7 | • | |
| | 03040 | | | | 4 | 2 | 87. 8 | l | 1 | 2 | 40.7 | 07 | ı | 00 70.4 20 - 6.8 | , | 7.1 | ı |
| ı | QBF407R | | | | c | - | 000, | <u> </u> | | Ş | 7 | 5 | | | ٦ | | |
| | 04060 | 1 | 1 | D | ٥ | 3 | 102.8 | ı | 1 | 50 | SI. /5 | 67. | ı | 03 31.75 29 - 8.8 | _ | 7 | ı |
| ı | 0BF407R | | - | | ٥ | 100 | 7 701 | l | 1 | 63 | 20 1 | ۶ | | 0 0 | 7 | c | |
| | 02080 | | | | 0 | 671 | 17.77 671 | · · · | 1 | 3 | - - - | 67 | ı | 03 36.1 29 = 12.8 7 | _ | 6 .7 | ı |

G 6D

2 49 B B B B

| ASX44 | ASX445/FACE MILLING | 5 | | | | | | | | | | | | | | | |
|-----------------|---------------------|----|------------------|----------|--------|-----------------------|--------------------------------------|--------------------|--------|----------|-------|---------|--------------|-------------------|-----|----------------|-----------------|
| TVDE | ORDER | -6 | UMBER - STOCK | | VUMBER | EFFECT IVE DIAMETE | FECTIVE MAXIMUM INNER CUTTING HEIGHT | INNER C EDGE DI | UTTING | HE I GHT | - | MOUNT | T. | KEY WAY | WAY | CUTTER | MAXIMUM |
| ∐ | NUMBER | | Z | <u>~</u> | TEETH | D | Q | D1 | D2 | Ξ | p | d h1 d1 | G | * | ب | WEIGHT (kg) | DEPTH OF CUT |
| COARSE PITCH | SE445R/ L0304C | 1 | ı | • | 4 | 80 | 102. 2 | ı | 1 | 50 | 25. 4 | 26 | 13 | 50 25.4 26 13 9.5 | 9 | 1.6 | 5.5 |
| FINE PITCH | SE445R/ L0306C | ı | 1 | • | 9 | 08 | 102. 2 | ı | ı | 50 | 25. 4 | 26 | 13 | 50 25.4 26 13 9.5 | 9 | 1.6 | 5.5 |

2

F16.

9

o

Replacement Sheet

MAX. DEPTH DIMENSIONAL OF CUT DRAWING PURCHASE SELECT CUTTER WEIGHT (Kg) **INSERT** HIGH RIGIDITY DUE TO EMPLOYMENT OF A CARBIDE SHIM

TYPE 20° POSITIVE INSERT ● A WIDE RANGE OF CHIP BREAKERS

SCREW-ON TYPE

PRECISE BUT INEXPENSIVE MOLDED

GENERAL CUTTING

98 |-|-

FACE MIL ASX445

| WAY | ļ | 9. | |
|--|---------|----------------|--|
| KEY | W | 9 | |
| MOUNT KEY | d h1 d1 | 22 20 11 | |
| CUTTING HEIGHT EDGE | Н | 40 | |
| ER ING SE ETER | D1 D2 | 1 | |
| CUTT CUTT ED DI AMI | D1 | 1 | |
| MAX. Diametef | DI | 63 | |
| JMBER EFFECTIVE MAX OF DIAMETER DIAME | ۵ | 50 | |
| NUMBER OF | 出 | 3 | |
| κ ^χ | R | • | |
| NUMBER OF STOCK | Z | ı | |
| ₹ × | | 1 | |
| ORDER NUMBER | | ASX445-050A03R | |
| IYPE | | COARSE PITCH | |

| <u></u> | | | B | |
|-----------|----------------|--------------------------------|-----------------|---------------|
| (1) SHIM | (2) SHIM SCREW | (3) CLAMP SCREW WRENCH(INSERT) | WRENCH (INSERT) | WRENCH (SHIM) |
| STASX445N | WCS503507H | TPS35 | TIPIST | MKY 35R |

A 37 B B R.

| S | (mm) | CORNER RADIUS | ٦ | 1.5 | | 1.5 | | 1.5 | | ı | |
|--------------|----------------|---------------------------------------|---|-----------------|-----|-----------------|-----|-----------------|---|-----------------|---------|
| NOIL | | וווונייט רממרו | - | 1.9 | | 1.9 | | 9 - | | 2.2 | |
| CONDITIONS | DIMENSIONS | THICKNESS | S | 3.97 | | 3.97 | | 3.97 | | 3.97 | |
| NG C | NO. | CIRCLE | ō | 13. 4 | | 13.4 | | 13. 4 | | 13.4 | |
| CUTTING | | GEOMETRY | | | | | 4 P | | - S - S - S - S - S - S - S - S - S - S | | d d 45° |
| FIG. 8 | CERMET CARBIDE | 94545M | | • | | • | | | | • | |
| | COATED | TOLERANCE F7030 F5010 AP151F | | • • | | • | | • | | 9 | |
| CHIP BREAKER | | ORDER NUMBER | | SEET13T3AGEN-JL | (4) | SEMT13T3AGSN-JM | | SEMT13T3AGSN-JH | | SEGT13T3AGFR-JP | |
| 0 | | SHAPE | | | | | | | | | |

1 1/4 " D K"

FIG. 9

4 41 "co m"

| | WORKPIECE | HARDNESS | GRADE | CUTTING SPEED (m/min) |
|---|---------------------------------|-----------------------|---------|-----------------------|
| Ь | MILD STEEL | <180HB | F7030 | 200[180~250] |
| | (EG XXXXX) | GIIOO I = | NX4545 | 180[130~230] |
| | | 180~280HR | F7030 | 160[120~200] |
| | CARBON SIEEL, | 100 2001 | NX4545 | $150[120 \sim 180]$ |
| | (EG XXXXX) | 280~350HB | F7030 | 120[100~150] |
| | | 200 - 00011D | NX4545 | 100[80~120] |
| | HARDENED STEEL | ≥40HRC | AP15TF | 80[80~100] |
| = | STAINLESS STEEL | מואלטי | F7030 | 180[130~250] |
| | (EG XXXXX) | ≥∠/UNB | NX4545 | 150[120~180] |
| ~ | NICKEL BASE ALLOY (EG XXXXX) | | AP15TF | 40[20~50] |
| | CAST IRON | TENSILE STRENGTH | AP151F | 180[130~250] |
| | (EG XXXXX) | <450N/mm ² | F5010 | 200[150~250] |
| | ALUMINUM ALLOY | | HT i 10 | 650[300~1000] |

| | | 414140011 | | WINTH OF | | | | | | |
|-----------|-------|---------------------------|-----------|----------|--------|------------------|---------|------------|----------|--|
| ~ | GRADE | F INSCRIBED THICKNESS WID | THICKNESS | WIPER OF | CORNER | CUTTING FEED PER | FED PER | 20100 | ADD TOOL | |
| | | CIRCLE | | | RADIUS | SPEED | T00TH | | DATA | |
| ار. ال | F7030 | 13.4 | 3.97 | 1.9 | 1.5 | 160 | 0.15 | 1. 090 YEN | PURCHASE | |

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4. 17 Feb. 15.

| PRICE | | 41, 160 YEN |
|---|---------|---|
| INSERT | | 0 |
| IACHINING OPERATING TIME TIME | min | က |
| | min | 62 |
| CUTT ING LENGTH | ши | 200 |
| TABLE DEPTH OF CUTTING FEED CUT (ap) LENGTH | шш | 1 |
| TABLE FEED | mm/min | 485 |
| REVOLUTION | min-1 | 608 |
| FEED | m/tooth | 160 0.15 |
| CUTT ING SPEED | m/min | 160 |
| TOOL NUMBER Of Ameter teeth | | 4 |
| TOOL DIAMETER | mm | 63 |
| DRAWING | | |
| TOOL NAME | | ASX445-063A04R Seet13T3AGEN-JL <i>F7</i> 030 |
| ¥ d | NAME | FACE |
| T00L | | - |

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TOOLING SHEET

A 41 FEB. 183

DATE OF PREPARATION | PREPARED BY 00KI 2001, 06, 06 DRAWING NUMBER YC12345C TEST WORK WORK

MACHINING 11 HOURS TIME 19 MINUTES

| PRICE | | 41, 160 YEN | 38, 000 YEN | 42, 500 Yen | 31, 500 YEN | 30, 150 YEN |
|---|-------------------|---|--|---|--------------------------------------|--------------------------|
| INSERT Replacement | | 0 | 0 | - · | 0 | 2 |
| TABLE OF CUTTING MACHINING OPERATING OF CUT LENGTH TIME TIME TIME | min | 8 | က | 33 | က | က |
| MACHINING | min | 62 | 9 | 222 | 59 | 315 |
| CUTTING | шш | 200 | 120 | 0.5 2,000 | 200 | 0. 4 2, 000 |
| DEPTH OF CUT (ap) | Œ | - | 9 | 0.5 | - | 0.4 |
| TABLE FEED | mm/min | 485 | 1, 147 | 541 | 510 | 382 |
| REVOLUTION | min-1 | 808 | 1,911 | 2, 707 | 1, 300 | 1,911 |
| FEED | mm/tooth | 0.15 | 0.15 | 0.10 | 0.10 | 0.10 |
| OUTT ING SPEED | uim/m | 160 | 150 | 170 | 82 | 09 |
| TOOL NUMBER OF IAMETER TEETH | | 4 | 4 | 2 | 4 | 2 |
| TOOL Diameter | Ш | 63 | 25 | 20 | 20 | 10 |
| DRAWING | | | | | | |
| TOOL NAME | | FACE MILLING ASX445-163A04R SEET13T3AGEN-JLF7030 | 3 SLOT MILLING BAP300R254S25 (ROUGHING) APMT1135PDER-M2F7030 | SRNZZOOSNIN SRGZOCAP15TF SRGZOEAP15TF | SZE4200SG | RMH100S12 RMT10AP15TF |
| TOOL MACHINING | I IVOOL OO IVUIIL | FACE MILLING | SLOT MILLING (ROUGHING) | 4 COPYING (ROUGHING) | 7 SLOT MILLING SZE4200SG (FINISHING) | 5 COPYING (FINISHING) |
| T00L | | - | 3 | 4 | 7 | 2 |